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where $B = 2\pi/P_{am}(P_k^2 - P_w^2)$; $R_k^* = R_k/R_w$; $\xi = \tilde{P}/P_k$; k is the deposit's permeability; b is its effective width; μ is the absolute viscosity of the gas; P_{am} , \tilde{P} , and P_k are, respectively, atmospheric pressure, deposit pressure (averaged over volume, and pressure at the supply contour; R_w is well radius; m is porosity (3, 4, 6).

To determine the conductivity parameter kb/μ from carrottage diagrams and approximate data on the porosity n , we must estimate the product bm .

Further, from (2) we find R_k^* for data on $\xi = P_w/P_k$; the quantity $\xi = \xi(R_k^*, \varepsilon)$ in (2) is determined from a graph or the formula:

$$\xi = 1 - \frac{1 - \varepsilon^2}{2} (1/2 \ln R_k^* - 1/R_k^{*2} - 1) \quad (3)$$

Knowing R_k^* and Q for a particular moment, we can determine average kb/μ 's for different R_k^* 's from (1).

We made special tests on gas wells to determine deposit parameters, the well pressure being held constant by pressure regulators.

Processing the test data by the above-described method, we found a set of values for kb/μ . Comparison of this set with that of kb/μ determined from prolonged exploitation data showed only a small 1-9% divergence, which obviously verifies satisfactorily our method for determining the conductivity parameter kb/μ for hydrodynamically perfect wells from data obtained by testing wells for constant well pressure.

Determination of the parameter bm from test data on wells is still an unsolved problem. Studies should be continued in this field and attention should be given to the possible employment of data giving the increase of pressure in a well, after being capped, to find bm .

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